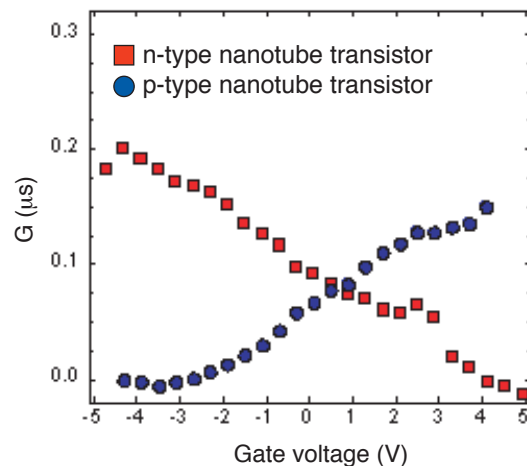
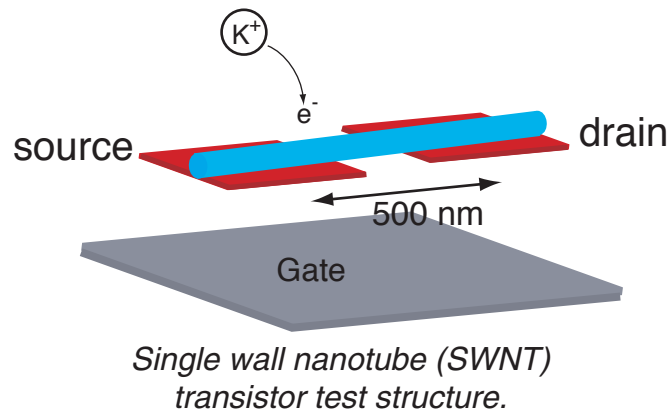


# Novel Nanosized Electronic Devices Fabricated

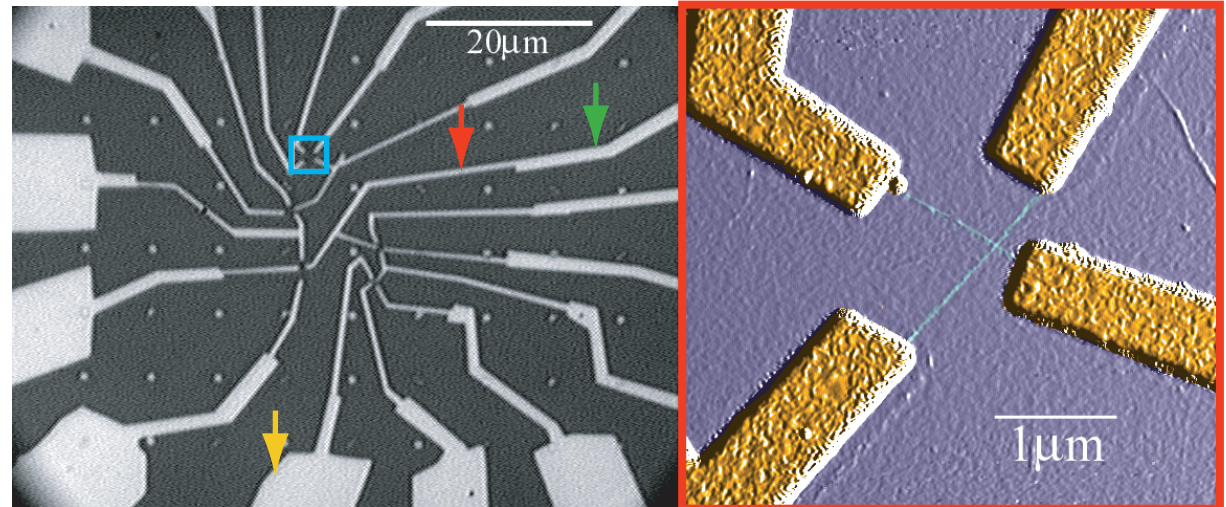
## Carbon Nanotubes Used to Construct Transistors and Junctions

### Nanotube Transistors



Conductance vs. gate voltage for nanotube transistors. For as-grown tubes (blue), the conductance increases with decreasing gate voltage, indicating p-type behavior. Tubes doped with potassium (red squares) show the opposite behavior, showing that an n-type transistor was formed.

### Crossed Nanotube Devices



Micrograph (left) shows gold metal leads (red arrow) from nanotubes (green arrow) to large metal pads (yellow arrow) to which testing wires are attached. There are five crossed SWNT devices on this chip. AFM image (right) shows one of the devices (red box at left). Two SWNTs (green) can be seen spanning the gold contacts (yellow). Study of the current-voltage relationships between the nanotubes revealed that junctions between two "metal" or between 2 "semiconductor" nanotubes conduct high current densities at low resistance while metal-semiconductor junctions form "Schottky barrier" diodes.